Claims

What is claimed is:

1. A storage system comprising:

a first storage element, comprising

a plurality of disk drives, each configured for storing data; and

a first storage controller communicatively coupled to a host computer system and configured for processing I/O requests received from the host computer system,

wherein the first storage controller is adaptable to interface with a second storage controller added to the storage system within a second storage element, and

wherein the first storage controller is further adaptable, when adapted to communicate with the second storage controller, to route the I/O requests to the second storage controller through a switching fabric.

2. The storage system of claim 1, wherein the storage system is a RAID storage system.

3. The storage system of claim 1, wherein the switching fabric is an SAN switching fabric communicatively coupled to the first and the second storage controllers and configured for routing the I/O requests between the host computer system and the first and the second storage controllers and comprising at least one of Fibre Channel and Infiniband.

4. The system of claim 3, wherein the storage system is adaptable to identify physical storage locations of both the first and the second storage elements using an I/O module added to the storage system when the first storage controller is adapted to communicate with the second storage controller.

5. The storage system of claim 4, wherein the first storage controller comprises an N-chip configured for communicatively coupling to the SAN switching fabric to route a portion of the I/O requests from the host computer system through the SAN switching fabric to the second storage controller, wherein the N-chip is further

configured for accessing data from the physical storage locations of both the first and the second storage elements to the I/O module.

6. A method of processing requests from a host computer system, comprising:

transferring the requests from the host computer system to a first storage controller of a first storage element; and

processing the requests to access physical storage locations within the first storage element,

wherein transferring comprises

forwarding a first portion of the requests from the first storage controller to a second storage controller of a second storage element.

7. The method of claim 6, further comprising processing the first portion of the requests with the second storage controller to access physical storage locations within the second storage element.

8. The method of claim 7, further comprising directly mapping a second portion of the requests to the physical storage locations within the first storage element and directly mapping a third portion of the requests to the physical storage locations of the second storage element.

9. The method of claim 8, wherein mapping comprises translating virtual storage addresses into physical addresses to access the physical storage locations of the first and the second storage elements.

10. The method of claim 6, wherein transferring the first portion of the requests comprises switching the first portion of the requests through an SAN switching fabric selected from at least one of Fibre Channel and Infiniband.

11. A first storage controller, comprising:

a host interface configured for communicatively coupling a host computer system to a first storage element;

a storage system interface configured for communicatively coupling the first storage element to a switching fabric; and

a processor configured for processing I/O requests received through the storage system interface and the host interface to access physical storage locations,

wherein the storage system interface is further configured for transferring a portion of the I/O requests through the switching fabric to a second storage controller.

12. The storage controller of claim 11, wherein the first storage controller is adapted to route the portion of the I/O requests to a second storage element and wherein the portion of the requests are processed by the second storage controller for accessing physical storage locations within the second storage element.

13. The storage controller of claim 11, further comprising a disk drive interface configured for communicatively coupling to a plurality of disk drives of the first storage element to access physical storage locations of the first storage element.

14. The storage controller of claim 11 is a RAID storage controller.

15. The storage controller of claim 11, further comprising computer memory configured for storing software instructions, wherein the software instructions direct the processor to transfer the portion of the I/O requests through the switching fabric to the second storage controller of a second storage element.

16. A method of storing data, comprising:

configuring a first storage element with a first storage controller capable of interfacing with a host computer system and a switching fabric; and

at least one of

transferring I/O requests from the host computer system to the first storage controller to access a plurality of physical storage locations within the first storage element and

transferring I/O requests from the host computer system through the switching fabric to a second storage controller configured with a second storage element.

17. The method of claim 16, wherein transferring I/O requests from the host computer system through the switching fabric to the second storage controller

comprises processing the I/O requests with the second storage controller to access physical storage locations within the second storage element.

18. The method of claim 17, further comprising directly mapping a first portion of the I/O requests transferred to the first storage controller to the physical storage locations within the fist storage element and directly mapping a second portion of the I/O requests to the physical storage locations of the second storage element.

19. The method of claim 18, wherein mapping comprises translating virtual storage addresses into physical addresses to access the physical storage locations of the first and the second storage elements.

20. The method of claim 16, wherein transferring the I/O requests comprises switching the I/O requests through an SAN switching fabric selected from at least one of Fibre Channel and Infiniband.